



Planetary Data System

Rings Node Report

Mark Showalter & Mitch Gordon

SETI Institute

PDS Management Council Face-to-Face

Tucson, AZ

April 10–11, 2014

A graphic showing the rings of a planet, likely Saturn, against a dark background. The rings are depicted as concentric, glowing bands. On the right side, a portion of the planet's blue and white atmosphere is visible, curving into the frame.

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A banner image featuring a dark space background with several concentric, glowing rings, similar to those of Saturn. On the right side, a portion of a planet's blue and white atmosphere is visible.

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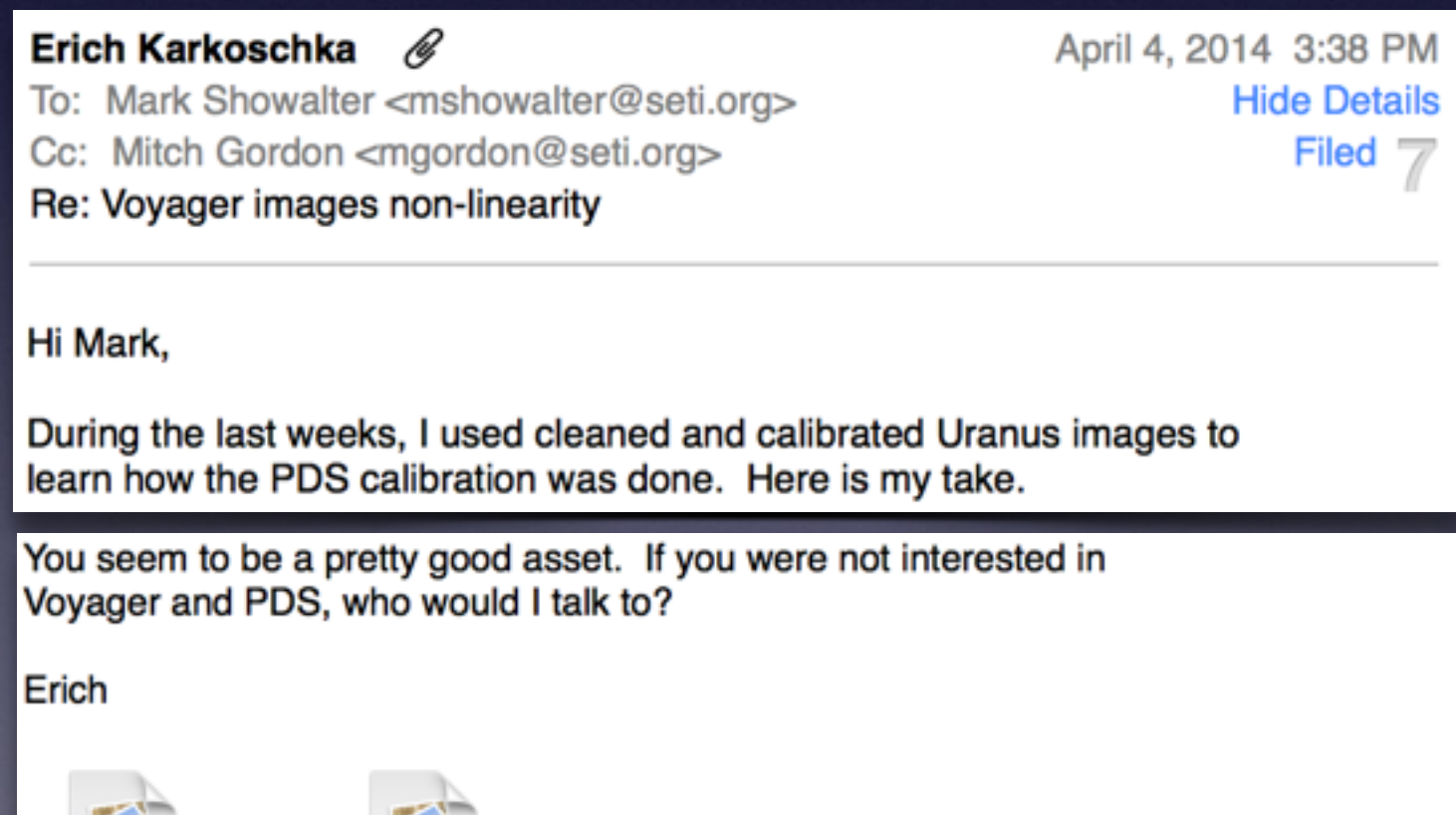
Mission/Active Archive/Restoration Highlights

- Cassini—What we do with each quarterly delivery:
 - Put ISS, VIMS, UVIS and CIRS volumes on line.
 - Validate all checksums.
 - Create a browsable infrastructure in HTML.
 - Create a downloadable .tar.gz archive of each volume.
 - Calibrate every ISS product and put it on line.
 - Create a PDS3-compliant label for each calibrated image
 - Create “preview” products in four sizes.*
 - Generate geometric metadata.*
 - Integrate all of this information into OPUS.*

*CIRS data is not yet integrated into these steps.

Mission/Active Archive/Restoration Highlights

- Voyager—We're not quite done yet.
 - Using PMDAP funding, we calibrated and geometrically corrected *every* Voyager image.



- Issues with the calibration pipeline are emerging after 40 years.
- Additional Voyager ISS support was not in our work plan!

Mission/Active Archive/Restoration Highlights

- Regarding Erich's comment...
“If you were not interested in Voyager and PDS, who would I talk to?”
- The ability to use (or even find) Pioneer 10 & 11 remote sensing data has already been permanently lost.
- The ability to use any of the Galileo remote sensing data sets will probably disappear within the next 5–15 years.

Mission/Active Archive/Restoration Highlights

- HST—New integration into OPUS!

OPUS [recent changes](#) [contact us](#) [start over](#) **Result Count:** **9,791** [View Results](#)

☒ General Constraints
Ring Geometry Constraints
NEW! Cassini Surface Geometry beta test
Wavelength Constraints
Hubble Mission Constraints
Image Constraints

Hubble Mission Constraints

▼ Detector ID ⓘ
☐ ACS-HRC 1682 ☐ ACS-SBC 1811 ☐ ACS-WFC3 64 ☐ WFC3-IR 20 ☐ WFC3-UVIS 1097 ☐ WFPC2 5117

► Filter Name ⓘ

▼ Instrument Mode ID ⓘ
☐ ACCUM 4650 ☐ ACQ 4 ☐ AREA 23 ☐ FULL 5094 ☐ MULTIACCUM 20

► Aperture Type ⓘ

► WFPC2 Targeted Chip ⓘ

▼ PI Last Name ⓘ
contains ▾

▼ HST Proposal ID ⓘ
contains ▾

▼ STScI File Name ⓘ
contains ▾

► HST Target Name ⓘ

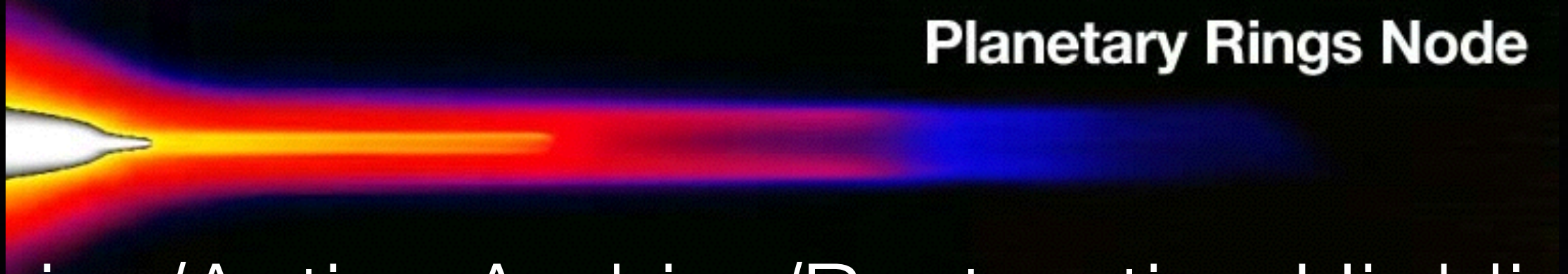
► Fine Guidance System Lock Type ⓘ

► Gain Mode ID ⓘ

► Exposure Type ⓘ

• OPUS is a project of the [NASA PDS Rings Node](#) at [SETI Institute](#) • [Browse Volumes Directly](#)

PDS Atmospheres Geosciences Imaging NAIF PPI Rings Small Bodies



Mission/Active Archive/Restoration Highlights

- HST—New integration into OPUS!

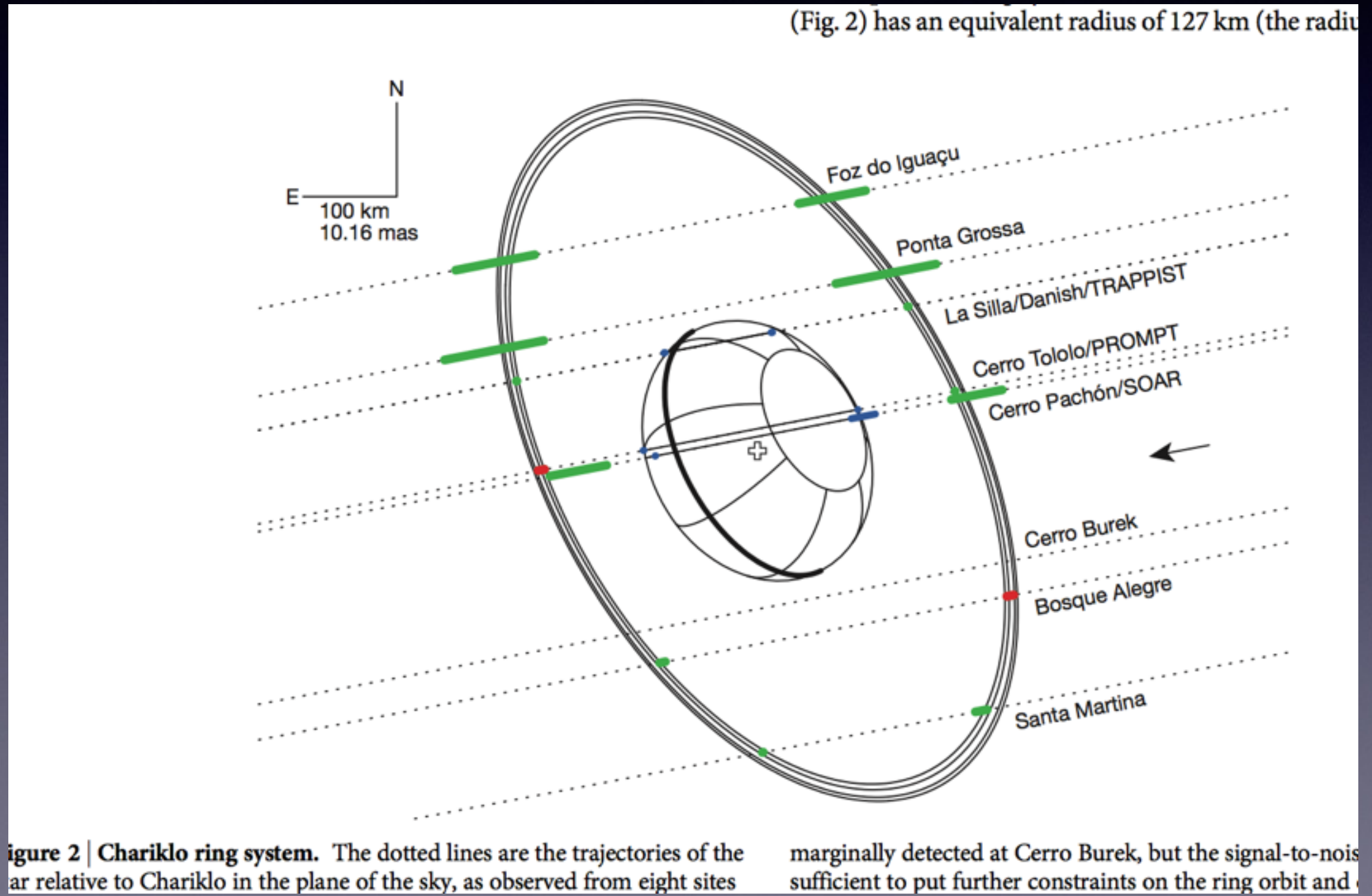
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[Prev](#) [Next](#) page **4** of 98 [100](#) results per page [choose metadata](#) [add this page](#) [add range](#) [cart is empty](#)

click image to view metadata
click magnifying glass icon to view detail page

Sorry Mike, We've Got Dibs!



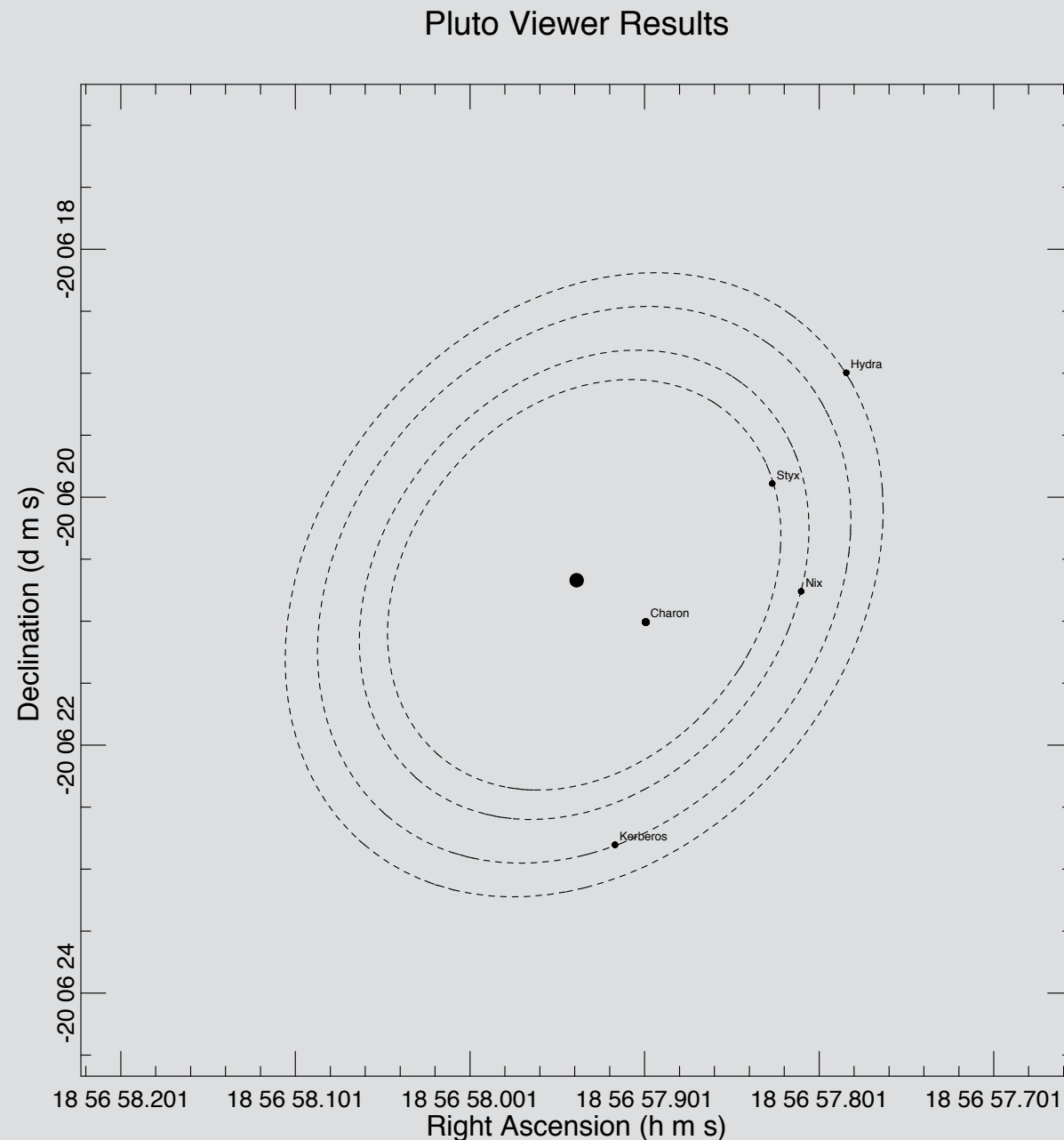
PDS4 Migration

- Rings Discipline Dictionary
 - Updated to IM 1.2.0.0
- ASTROM_0101
 - Test data set currently being updated to IM 1.2.0.0
- Projected Migration
 - FY14:
 - 3 Cassini Ring Occultation data sets
 - FY15:
 - 3 Voyager Ring Occultation data sets
 - 2 HST satellite astrometry data set

Data Holdings & Deliveries

- Current Data Holdings as of April 1, 2014
 - 2.4 TB (all PDS3)
 - 44 data sets, 557 volumes
- Expected Deliveries April 2 through October 1, 2014
 - 2 deliveries for 8 data sets, from 4 instruments
 - ~ 130 GB
- Projected Growth over next 5 years
 - ~ 4 TB (assumes complete Cassini redelivery EOM + 1 year)
 - Additional ~ 3 TB if we keep PDS3 versions
- NSSDC Deliveries
 - 12 datasets (11 volumes) archived at NSSDC
 - 6 data sets (89 volumes) projected for FY14

User Services 1: Tools



Time (UTC): 2014-04-10
Ephemeris: PLU043 + DE430
Viewpoint: Earth's center
Moon selection: Charon, Styx, Nix, Kerberos, Hydra
Ring selection: Styx, Nix, Kerberos, Hydra

- Most tools now support the Pluto system.
- The New Horizons viewpoint is still TBD.
- The Cassini tour is now good till the end of the mission.
- The latest moon has been added to the Neptune tools.

User Services: Web Site

- Cassini support pages
- Access to browse images, calibrated images, tables of enhanced geometric metadata, information on the remote sensing instruments
- Seeing several thousand users per month (not counting bots, etc)

Security

- The recently disclosed OpenSSL vulnerability does not affect our site.
- Our entire web site is backed up regularly to a remote site (at my house—Thanks, Google!)
- All product checksums are validated periodically.
- Standard precautions against cross-site scripting are in place for all our tools.
- We keep our disaster recovery plan up to date.

PDS4 Development Effort

- Staff time supporting DDWG activities including tiger teams: ~ 40% of Gordon's time.
- Staff time supporting CCB: ~ 5% of Showalter's time.
- Staff time installing registry software (a one-time task): ~ 16 hours.

Plans 2015–2019

- Tools needed for PDS4
 - A tools installation API.
 - Content validation tool.
 - Label design tool.
 - Product visualization tool.
 - Format conversion tool (e.g., VICAR to FITS).
 - On-the-fly PDS3 to PDS4 tool.
- Rings Node Development Plans
 - Re-design the web site around a modern CMS.
 - Continue to enhance OPUS to meet user needs.
 - Integrate OPUS into PDS4 search capabilities.
 - Further enhancements to our search metadata.
 - Port our remaining legacy software to Python.